# Burk

## Allotment Management Plan

T6N, R28E, sections 1-4, 16-21, and 28-30: and T7N, R28E, sections 25-27, 34-36 of the GSRBM.

This allotment management plan has gone through the National Environmental Policy Act (NEPA) process, including Environmental Assessment (EA), Finding of No Significant Issues (FONSI), and Decision Notice (DN) signed February 5, 2009, and implemented that same year.

**Description of Allotment:**

The Burk Allotment is a 5,625-acre allotment consisting of four pastures – East, West, Railroad and SU pasture. SU and Railroad pastures were previously part of the Burro Creek Allotment, but through reconfiguration and MOU in 2005 with the Arizona Elk Society, SU pasture became part of the Big Lake Allotment, and Railroad was added to Burk. Then in 2008, a similar reconfiguration and MOU with the AES added SU pasture to the Burk Allotment. Railroad and SU pastures are not contiguous to the other two pastures. East and West pastures are bordered to the south by the Udall Allotment whereas Railroad and SU pastures are located directly north of the Big Lake Recreation Complex. The elevation ranges from 9,190 to 9,300 feet and is relatively flat. The topography on East and West Pastures is gently rolling open grassland with Seven Springs Draw running through the northwestern corner. OD Ridge is the major landform that runs along the southern portion of the allotment from east to west. Railroad and SU pastures range from 9000 to 9,100 feet in elevation and are predominately open grassland. SU pasture contains riparian drainages in the southwest portion of the pasture. Prior to the 2009 decision, the season of use was May 16 – October 31 and permitted 249 cow/calf pairs, or 1,394 Animal Unit Months (AUMs).

**Desired Future Conditions**

Range

- Allotment is stocked when the range is ready, at a level that balances grazing with proper forage use. Rangeland is generally ready for grazing when the soil has become firm after winter and early spring precipitation, and when the plans have reached the defined stage of growth at which grazing may begin under a specific management plan without long-lasting damage. Rangeland is generally ready when cool-season grasses are headed out, forbs are in full bloom, and brush and aspen is leafed out (Rangeland Analysis and Mgmt. Training Guide 6/97).
- All structural and non-structural improvements are in functional condition.
- Vegetative composition is improving and moving toward potential plant community. Where potential exists, the herbaceous vegetation is managed to achieve or maintain fair or better range conditions with static or upward trend or to maintain moderate to high similarity to potential natural communities (PNC) as described by Terrestrial Ecosystem Survey (TES).
- Proper utilization levels are in place to provide ground cover to keep soils stable and promote water infiltration.
- Where potential exists, achieve or maintain rangeland to fair or better range conditions with static or upward trend.

- Increase percentage of warm and cool season species to increase desirable species and ground cover.
- Where potential exists, degraded riparian areas are restored to good or better range conditions.

Wildlife

- The Railroad Pasture is adjacent to a nesting bald eagle site located on Crescent Lake Knoll. Grazing operations will be managed to minimize any direct and indirect disturbance to the eagles during the nesting season.
- The allotment is almost entirely high elevation grassland which is important habitat for antelope which is a MIS. The management of the allotment will incorporate strategies to improve and or maintain habitat conditions important in the life cycle of antelope.

Fisheries/Watershed/Soils

- Maintain satisfactory riparian and instream habitat conditions in order to benefit aquatic dependant resources on the allotment as well as downstream from the project area.
- Provide high plant vigor and adequate vegetative cover of deeply rooted plants such as sedges and rushes to protect soil surface from overland flow, where potential exists.
- Springs have riparian species present, and the vegetation is in satisfactory condition, where potential exists.
    - Satisfactory or better watershed conditions are maintained in both the drainage corridors and in the uplands to minimize sediment movement into drainages.
    - Existing road system has minimal effect on erosion rates that could potentially alter stream habitats.
    - Healthy riparian vegetation is present and maintaining its density and vitality. Maintain adequate streambank vegetation (woody and non-woody) cover.
    - Little to no active headcutting occurring within drainages in the action area.
    - Restoration of downcut channels, where feasible.
    - Instream flows are maintained for the benefit of aquatic dependent resources.
- Aquatic habitats in the action area support viable populations of species designated as TES and MIS as well as other vertebrate species that are suitable to those habitats.
- Minimize soil compaction and trampling damage to riparian areas.
- Vegetative ground cover is improving toward potential natural conditions. Provide livestock management strategies that will ensure the minimum or better ground cover by soil type to keep erosion rates below threshold levels.
- Move toward minimizing soil erosion to below threshold levels, Minimize soil compaction.
- Identify watershed improvement opportunities (on gullies, headcuts, excessive erosion)
- Record presence of Noxious Weeds.

Heritage

- Heritage resources are inventoried, documented, and evaluation of all sites are to Forest standards. Furthermore, management activities should promote the protection and preservation of heritage resources.

**Management**:

1. Riparian areas are critical areas on the Burk allotment. A management guideline of conservative use (30-40%) in all riparian areas during the livestock grazing season will be employed to improve riparian/wetland, soil and watershed and vegetative condition. Conservative use will provide riparian vegetation of adequate height and cover to protect soil surfaces and dissipate energy during overland flows.

2. A management guideline of conservative use (30 - 40%) in the uplands as measured at the end of the grazing season will be employed to improve vegetative and soil conditions.

3. The grazing period within the allotment will be based upon weather/climate conditions, current growing conditions and the need to provide for plant re-growth following grazing. The length of the grazing period within each pasture will consider and manage for the desired conditions. The on-date will be when range readiness has been met, which is typically June 15 – July 1 for the spring and summer grazing. The off date would generally occur on or prior to October 31.

4. Grazing will occur through a system which allows for plant growth and recovery. A rest rotation system is the primary system expected to meet desired conditions. Other systems may be employed to facilitate specific resource objectives. Pasture rotations will be planned at the beginning of each grazing year and will be continually modified through adaptive management in response to changing resource conditions.

5. Permitted livestock numbers will vary between 805 to 1,145 AUMs annually. The maximum number of 1,145 AUMs would be supported during times of favorable climatic conditions, having abundant vegetative growth, and/or when desired conditions are met.

6. Annual authorized livestock numbers will be based on range readiness, existing conditions, available water and forage, and predicted forage production for the year. Adjustments to the annual authorized livestock numbers (not to exceed 1145 AUMs) may occur during the grazing year, based on favorable conditions or may be adjusted downward if conditions are not favorable, such as in the case of drought, insects or other environmental factors.

7. Generally, pastures will be grazed only once during the grazing year. However, if the need arises to provide rest or deferment for other pastures, a pasture may be used twice provided there has been sufficient vegetative growth/re-growth and grazing is managed to meet the desired conditions specified above.

**Adaptive Management**

The following adaptive management options may be implemented if monitoring indicates that the authorized management described above for the Burk Allotment is not meeting desired conditions, or to address localized resource issues.

1. If desired vegetative conditions are not met in riparian areas, apply a herder to move livestock out of riparian areas.

2. If riparian vegetation height and cover is not sufficient to protect soil surfaces and dissipate energy during overland flows within the riparian areas: Create a riparian pasture within SU pasture to provide greater control of livestock use within critical riparian areas. Concurrently construct water developments in the non-riparian portion of SU pasture to provide livestock watering. The objective is to reduce livestock concentration in the riparian bottoms and allow more effective use of the uplands.

3. Construct riparian pasture fencing at Seven Springs Draw.

4. Develop the following upland waters if needed to improve livestock distribution:

- Develop upland waters in north end of East and West pastures near Seven Springs. i.e extend existing Seven Springs development.
- Develop Little Spring in West pasture or develop Turkey Draw Spring (located on Udall allotment).
- Develop a trick tank in the southern end of East pasture.
- Develop a trick tank in Railroad pasture.
- Develop upland waters in SU pasture.

**Additional Management Requirements**

- Appropriate inventories must be conducted in advance of the implementation of any ground-disturbing activities. Projects should be managed in such a manner that ensures a determination of either "No Historic Properties Affected" or "No Adverse Effect" to heritage resources, and discovery of any undocumented heritage resources during project implementation should result in immediate cessation of any ground disturbing activities in the locale and notification of the Forest Archaeologist.
- According to the Programmatic Agreement between the Forest Service and the State Historic Preservation Officer, maintenance, replacement, or reconstruction of existing facilities are not considered undertakings and do not require additional survey. However, activities may be considered undertakings, depending upon the nature of the installation/removal activities.
- Natural springs and the summits of knolls and mountains are often traditional cultural places (TCP's), and the allotment contains potential shrine sites. Therefore, any proposed projects that are in the vicinity of springs, or on the summits of prominent knolls or mountains have the

potential to affect TCP's (even if these projects are not considered undertakings by the AZ State SHPO) and will therefore require Tribal Consultation.

## Monitoring Strategy

### Introduction

The objective of this monitoring plan is to identify monitoring methodology and frequency to determine whether management is being properly implemented and whether the actions are effective at achieving or moving toward desired conditions.

Monitoring is a measure of indicators that detect change and may trigger further detailed analysis of a particular resource. Either monitoring or detailed analysis may trigger adaptive management options on the allotments on a seasonal basis or to verify changes needed in the Allotment Management Plan and permit.

Tables are provided that give an overview of monitoring needs on the allotments, followed by narratives that explain planned monitoring in more detail.

### Monitoring Definitions

Monitoring: Monitoring is defined as: the orderly collection, analysis, and interpretation of resource data to evaluate progress toward meeting management goals and objectives. This process must be conducted over time in order to determine whether or not management objectives are being met.

Implementation Monitoring: Determines whether standards and management practices are implemented as detailed in an Allotment Management Plan (AMP), or Annual Operating Instructions (AOI). This short-term monitoring answers the question: was the management implemented as designed? It annually documents several items. Examples include:

1) Were management actions implemented as designed?

2) Did the management actions achieve the annual effect expected?

Items which may be documented through implementation monitoring include, but are not limited to: actual use (livestock numbers and days), condition of range improvements, etc.

Effectiveness Monitoring: Determines whether management practices are effective in moving the allotment toward a desired condition as described in the AMP. This long-term monitoring documents whether management actions are having the expected progress towards achieving resource management objectives. Examples include:

1) Have management practices met resource objectives or corrected problems?
2) Utilization measurements
3) Stubble height measurements
4) Tracking progress of specific PFC elements

## Monitoring Summary

The following Tables 1 and 2 summarize the monitoring to be accomplished on the allotments.

Table1: Summary of Monitoring by Allotment

| Monitoring Item | Burk Allotment |
|---|---|
| Riparian obligate vegetation height | annually |
| Ecological Status/Range Condition (trend, composition, soil cover) | Years 5 and 10 |
| Riparian Condition / Key PFC Elements | Years 1, 5 and 10 |
| Soil Condition | As Needed |
| Watershed / Soils Problem Areas | As Needed |

Table 2: Specific Monitoring Items: Who, What, When and Where

| Monitoring Item: | Methods | Timing (mid-season) | Frequency (Interval, years) | Where | Critical Triggers | Lead Responsibility |
|---|---|---|---|---|---|---|
| Riparian Obligate Vegetation height | Stubble Height | end of growing season and/or seasonal | Annually | Critical riparian areas | Sat: 6" going into winter Unsat: 8" going into winter | Range |
| Ecological Status/ Range Condition (Trend, Composition, Ground Cover) | Various methods* | Late Summer | Year 5 & 10 | Permanent transects | Poor or very poor range; Less than USLE Tolerance thresholds conditions | Range |
| Assess Riparian condition / key PFC elements | PFC | Mid-Summer or Later | Unsat: year 5 & 10 Sat: year 10 | Critical Areas | Downward or non-apparent trends | Watershed |
| Soil Condition | Various methods* | Any | As Needed: Onset, yr. 5 & 10 | Critical Areas | Downward or non-apparent trends | Watershed |
| Watershed/Soils Problem Areas | Field observation and/or inspection | Any | As Needed: Onset, yr. 5 & 10 | Gullies, headcuts, rills | Non-apparent or downward trends | Range |

***Available from Interagency Technical Guide,1996, Region 3 Rangeland Analysis and Management Training Guide, Principles of Obtaining and Interpreting Utilization Data on Rangeland, 5/07, finalized Forest Service Handbook, and other acceptable methods.**

**Implementation Monitoring** -- Objective: Ensure that the action(s) described in the Decision Document (EA) are implemented accordingly, as scheduled and are in compliance with the Forest Plan standards and guidelines.

A. Planning - Decision Implementation Schedule

B. Management – The standards and management practices are being implemented as detailed in an AMPs or AOIs.

C. Range Readiness - Range readiness checks will be conducted in anticipation of livestock entry in seasons when spring growth is delayed. The main objective is to determine whether plants are physiologically capable of being grazed and trampled without causing long term damage to the vegetation or soils.

This monitoring is completed prior to the scheduled turnout date.

1. Soil condition - The soil is firm, at or below field capacity.

   a. Saturated soils are not present. Soil compaction is minimal.

   b. Standing water and ponding from snowmelt is not present.

2. Vegetative development stage. With rest or deferment, it may be possible to graze at earlier stages however not on an annual basis. Rangeland is generally ready when cool-season grasses are headed out, forbs are in full bloom, and brush and aspen is leafed out. Range readiness dates will vary between allotments with different resource attributes and management systems.

   Annual monitoring to adjust or evaluate the timing, intensity, frequency and season of use, and livestock numbers will be conducted during the grazing season (seasonal) and/or at the end of the growing season. This practices adaptive management and makes necessary management changes needed for plant development and recovery. The methods to be used may include, but are not limited to:

   1. Stubble Height – To monitor riparian vegetation in critical areas to have adequate stubble height at the end of the growing season in order to protect soil from high spring runoff and snowmelt in East, West and SU pastures of the Burk Allotment. A recommended minimum of 6 inches of stubble height of Carex species in satisfactory riparian condition (in PFC) and 8 inches of stubble height of Carex species in unsatisfactory riparian condition (FAR or NF) at the end of the growing season is expected to meet the desired condition.

   2. Utilization (Height Weight, Landscape Appearance, Grazed Class etc.) - To assure that conservative maximum use levels of 30%-40% in key areas are being met. Along with actual use and climate data, these methods measure short-term effects of grazing activities and are used as a basis for adjusting grazing use.

   3. Residual measurements – To assure that adequate standing bunch grasses are left post livestock grazing for antelope fawning hiding cover. Height of un-grazed grasses will be collected at the end of the growing season.

   4. Compliance with Annual Operating Instructions (AOI) - The AOI includes pasture rotations, numbers to be grazed, pasture entry and exit dates, improvement maintenance and construction, and general annual allotment operating procedures.

5. Actual Use Information (Number of livestock and Season of Use). The permittee will keep an accurate record of the number of livestock run on the allotment and entry and exit dates of each pasture grazed.

**Effectiveness Monitoring --** Objective: Effectiveness monitoring is intended to determine whether management is successful at moving rangeland resources towards desired conditions. The long term-term health of upland and riparian resources will be monitored in key areas or critical areas on each allotments using one or more of the following methods as needed, but not limited to:

A. Ecological Status and/or Range Condition Trend - Range clusters and areas suitable for determining long-term trend in vegetation should be read at 10th year. Emphasis on monitoring ecological status will be made.

    1. Ecological Status (Cover Frequency/Similarity)
    2. Parker 3 Steps
    3. Paced Transect

B. Cover – The percent of an area that is covered by vegetation, rocks and litter. Ground cover is important to intercept raindrops impact before reaching the soil. An increase in vegetation and litter cover from baseline measures is considered as moving toward Desired Conditions (DC), a decrease is considered as not accomplishing DC.

    1. Point Cover
    2. Cover Frequency
    3. Parker 3 Steps
    4. Paced Transect

C. Forage Production – Forage production surveys for the allotments will validate capacity estimates and may result in further adjustments in stocking rates and season of use at 10th year. Forage production survey will facilitate capacity determination if the rangeland is found to support more AUMs than the current high end or less than the current low end.

    1. Production/Utilization surveys
    2. Ocular Estimates

D. Noxious Weeds - The location of any noxious weeds should be noted in the utilization-monitoring write up. During this monitoring any noxious weeds shall be grubbed out or treated and documented regarding the location. Noxious weeds can be tracked from the same data used to collect plant composition and density.

Monitoring will be used to adjust or amend previously described actions in the decision document or AMP. Information on monitoring should be shared with the permittee and others concerned with the decision. If the monitoring data is not achieving or moving toward the Desired Conditions, Forest Service personnel must analyze the problem and decide on a course of action. If necessary, an ID Team may be instituted to determine if the goals and objectives are correct or need to be adjusted. Re-initiation of NEPA may not be necessary if the action is still within the scope of the original decision.

**Monitoring Plan: Riparian, Watershed/Hydrology, & Soils**

Watershed Hydrology Monitoring Methods

Under "watershed monitoring," most often the concepts of runoff timing, runoff quantity, runoff quality, and sediment yield come to mind. Unless grazing is overbearing and extreme as it was a century ago, these characteristics usually do not produce measurable change resulting from allotment management. Runoff timing and quantity is usually a function of either massive precipitation events such as large rainfalls or rain on snow events, or large-scale ground disturbing activities such as wholesale clear-cut logging or fires that remove all existing overstory and ground cover. Grazing that is even halfway balanced with utilizing around half of the forage production rarely has significant effect on runoff timing and quantity that is recognizable as being outside the normal range of variability. Potentially, grazing activities can be tied to flooding, however it is currently more likely a minor contributing factor, rather than a single causal agent. Runoff quality is difficult to assess as it is a function of when sampling occurs, such as: the start of a flood event, at its peak, or near its end. Dissolved solids usually peak near the start of a runoff event, while sediment flux peaks with discharge. Sediment discharge out of a watershed is not usually recognizable as extreme or out of norm until at the scale of landslides, massive gully formation, or following large area denudations such as following fires. The smaller scale of sediment discharge associated with grazing allotments is best monitored at a local scale, watching for pedestalled plants, surface rill erosion or gully formation within problem areas. Larger basin-scale monitoring of sediment movement is usually studied in relation to river or stream functionality (PFC discussed below) or on even larger scales which aim at geomorphological changes.

As watershed hydrology is intimately related to the health or functionality of its drainage network, monitoring drainage characteristics often pays off. The discussion below pertaining to "Riparian Areas" concerns the proper functioning condition (PFC) of drainage channels, which pertains to watershed monitoring.

There are numerous elements that influence watershed function: soil infiltration rates, ground cover, canopy cover, amount of overstory, soil type, soil condition including compaction, soil structure, slope, etc. Many of these factors have been combined into what are known as "runoff curves" in standard methods of calculating potential runoff from different ground cover scenarios such as urban areas, pavement, and agricultural fields, to name a few. These methods can estimate runoff from whole sub-watersheds or basins and are sensitive to gross differences in cover type, like for example an urban area versus an agricultural field. However, they are not designed to be sensitive to minute changes that occur from subtle differences in compaction for example, or slight changes in litter ground cover. Most runoff formulas use soil type as a constant (soil classes A thru D) and subtle differences in soils are not accounted for. Therefore, the concept of runoff curve numbers is incapable of tracking allotment management changes and is wholly inadequate as a monitoring tool at smaller scale.

In terms of monitoring "watershed condition," most attention seems to focus on ground cover. This item is covered under "Soils" below. Related characteristics, such as monitoring local rill and gully formation, or areas of excessive plant pedestalling are also discussed under "Soils." The condition of drainage channels is discussed under "Riparian Areas" below.

Soils Monitoring Methods

As soil formation is extremely slow, the conservation of soils – the basic resource – is of prime importance. Several attempts at modeling soil erosion have been made, however in order to simplify the countless contributing factors, most of these models were initially designed to simulate erosion from agricultural fields. Later, these models were extrapolated to wildland situations; however, their results

must be taken at best as gross estimates of actual values. Resulting values serve more as a basis of comparison rather than absolutes.

The most acclaimed of these erosion models is known as USLE, or the Universal Soil Loss Equation. It was developed in the 1950's under Walter Wishmeier at Purdue University. The USLE is the most comprehensive technique available for field use in estimating cropland erosion. It involves six major factors that affect upland soil erosion in terms of water: rainfall erosiveness, soil erodibility, slope length, slope steepness, cropping management techniques, and supporting conservation practices. Four values are commonly derived from USLE, including erosion rates and corresponding ground cover for: potential soil loss, natural soil loss, current soil loss and tolerance soil loss. These are further defined in the Apache-Sitgreaves Terrestrial Ecosystem Survey. Briefly, they are defined as follows. Natural soil loss is the rate of soil loss expected under climax conditions, potential soil loss is the loss rate expected under complete removal of ground cover, tolerance soil loss is the loss rate that can occur while sustaining inherent productivity, and current soil loss is the loss rate under existing conditions of effective ground cover.

The most important element in controlling erosion, according to the USLE model is **ground cover**. Data regarding effective ground cover is collected in numerous ways. It is collected from permanent range transects (Parker 3-Step), from Daubenmire transects, from pace transects, or even from ocular estimates. This ground cover data is sufficient to track changes in ground cover, which relates to watershed condition as well as soils.

If more detailed information is desired regarding soils, then the standard Region-3 protocol for **soil condition** is used which more closely looks at numerous site factors that enter into soil function. This may be of use in areas as small as a pasture, in order to assess what elements of soil condition may be at risk the most and it may also yield some answers regarding what needs to change for a better soil condition score.

In specific local instances, **problem areas** with obvious signs of erosion such as **rills, gullies, headcuts, or pedestalled plants** may be found. If documentation of this is desired, it is recommended to take photographs, roughly describe conditions and mark locations on maps so they can easily be relocated. It is advised to seek help from SO watershed specialists regarding restoration plans. If needed, conduct a soil condition assessment in order to help determine causes of accelerated erosion that can then be used to change livestock management or to seek other means of helping to correct the situation. In cases of large headcuts or gullies, different livestock management may help the healing process, but active restoration will be needed to reshape affected areas and to provide effective means of stabilization.

Riparian Area Monitoring Methods

The standard assessment protocol for riparian and wetland areas is the **PFC** procedure (Proper Functioning Condition). This assessment is established for lentic (wetlands) and lotic (streams) areas, and a separate procedure is used for each respective type of riparian area. The lotic procedure uses 17 key questions, while the lentic procedure uses 20 questions. During the assessment, it is encouraged to answer each question as detailed as possible. I case of "no" answers, these items then become the focus for future monitoring to determine whether positive change has occurred. In this regard, monitoring of riparian areas becomes very simple, using established procedures, and being able to focus on changing only specific elements to obtain satisfactory conditions.

If needed, each of the individual **PFC elements can be quantified** by separate procedures on an as-needed basis. For example, if information is desired regarding species composition, a separate line transect can be established, or random transects can be read to establish current conditions so that future repeat data can be compared to establish trends. Similarly, methods to quantify any site characteristic can be found to help answer specific questions. Under normal circumstances, quantification of PFC elements

is not necessary, and field conditions can be photographed and adequately described to serve the purpose of documenting current or improving conditions.

Lentic Area **Stubble Height** of sedges can be measured at onset of seed-set to help gage whether a minimum of 6 inches will be present going into winter in functioning areas, and whether a minimum of 8 inches will be present in non-functional and functioning-at-risk areas before going into winter. The purpose is to keep sedge roots healthy and abundant to protect soils, to cover bare ground or raw banks with vegetation to keep soils in place during spring runoff and to encourage maximum growth of sedges needed for riparian / wetland function.

Riparian Condition – This monitoring tracks the effectiveness in improving or maintaining riparian condition.

1. Full PFC assessments of lentic or lotic areas
2. Assessment of key elements needing improvement

### Documentation of Monitoring

All forms of monitoring will be documented and retained in appropriate District files.

### Best Management Practices

A Best Management Practice (BMP) is a practice or combination of practices that are determined (by a state or designated area-wide planning agency) through problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals.

BMPs from various sources have been incorporated into the authorization, monitoring, adaptive management options and mitigation measures for the proposal. These sources include Arizona Department of Environmental Quality, Apache-Sitgreaves Land Management Plan, Forest Service Handbook 2509.22 (R3 Soil and Watershed Conservation Practices Handbook), and other sources listed in the Specialist Report for Watershed, Hydrology, Riparian and Soils.

The following are examples of BMPs incorporated into project design:

**1.** The **location, timing and intensity of livestock grazing** activities shall be implemented with objectives of achieving soil cover to prevent accelerated erosion and to protect water quality.

**2. Planned grazing systems** shall be implemented to maintain or improve plant cover while properly using the forage available, increasing efficiency by uniformly using all suitable parts of each grazing unit, reducing erosion and improve water quality, ensuring a supply of forage throughout the grazing season, increasing production with improved quality of forage, enhancing wildlife habitat, promoting flexibility in the grazing program and buffer the adverse effects of drought. Proper stocking and improved distribution of cattle will be major considerations for evaluating effects of implementing a system.

**3. Grazing** shall be at an **intensity** that will maintain enough cover to protect the soil or improve the quantity and quality of desirable vegetation. Utilization guidelines may be adjusted by soil condition and other resource concerns. Key grazing areas will be monitored to determine when cattle should be moved to prevent overuse. Riparian areas shall be identified as critical areas.

**4**. Utilize **salt** to improve livestock distribution. Salt a reasonable distance (at least ¼ mile) away from water or natural congregating areas such as roads, trails, and saddles in hills, and avoid key areas. Move salt when distribution objectives are not being met or to correct localized overuse problems.

5. **Structural range improvements**, when determined necessary to meet desired conditions, such as fences, water developments, trails and corrals, will be planned, constructed and utilized in a manner to enhance or maintain water quality.

# PICNIC
## ALLOTMENT MANAGEMENT PLAN

### CURRENT PERMIT AND NEPA HISTORY

The February 9, 1999, Environmental Assessment (EA) and the June 22, 1999, Decision Notice (DN) for an Allotment Management Plan is incorporated by reference into the Special Terms and Conditions. Subject to the above DN this portion of Part 3 constitutes the Allotment Management Plan for the Picnic Allotment identified in Part 1. The Decision implemented the following:

1. The Decision reconfigured the existing allotment boundaries of the Picnic and Basin Allotments into more logical grazing units and formalized a pasture configuration that had been used in the past. There were two permittees on the Picnic and Basin allotments. Traditionally Hall Revocable Trust had used the Basin Allotment and the Hall Pasture of the Picnic Allotment. Aldrice and Sybil Burk had used the rest of the Picnic Allotment and none of the Basin Allotment. These two areas were called the Picnic Unit (Aldrice and Sybil Burk) and the Hall unit (Hall Revocable Trust). The new configuration adjusted the allotment boundaries to match the boundaries of the Hall unit and the Picnic unit.

2. In addition to losing Hall Pasture from the Picnic Allotment, Nutrioso Pasture was removed from grazing for TES fish species concerns and the permittee waived back the Saffell Springs Allotment. To offset this loss, Lower Pasture from the old Rudd Creek Winter Allotment was added to Picnic Allotment.

3. The Decision formally incorporated the Hall Pasture of the Picnic Allotment into the Basin Allotment. The Picnic Allotment was combined with the Lower Pasture of the adjacent Rudd Creek Winter Allotment, creating a three pasture, late fall-early winter use allotment. These changes were formalized in Permit Modification #3.

### DESCRIPTION OF THE ALLOTMENT

The Picnic Allotment is located four miles southeast of Springerville, Arizona. The allotment contains 4,049 total acres. The elevation ranges from approximately 7,200 to 7,622 feet. The allotment is comprised mainly of one seed juniper and pinyon pine overstory with blue grama dominating the under-story and open grasslands. Other associated species include spike muhly, bottlebrush squirreltail, wolftail, poverty three-awn and snakeweed. Shrubs species include cliffrose, skunkbush sumac, rabbitbrush, and wax currant and four-wing saltbush in the uplands and Coyote willow in the riparian corridor of Nutrioso Creek.

### GOALS AND OBJECTIVES

a. Balance permitted livestock use with allotment capacity (page 2 of EA)
b. Establish utilization standards and season of use that will provide for the physiological needs of the vegetation (page 4 of DN)
c. Improve vegetation and range condition (page 10 of EA)
d. Improve watershed and soil condition (page 18 of EA)

### MANAGEMENT STRATEGY

The livestock operation will consist of a single herd operating within a three-pasture rotational grazing system under late fall-early winter use only. The new number of livestock and season of use are:

- The permitted number of livestock is 180 cow/calf pairs or 270 AUMs
- The season of use is November 1 to December 15 every other year, alternating with Molina Springs Allotment.

On alternating years livestock will be trailed from the Burk Allotment to the Picnic or Molina Springs Allotments. Cattle will trail north along Forest Road 285 to the junction with Forest Road 76 and turn west on Forest Road 76 continuing through Saffell Canyon and Murray Basin to the first pasture scheduled for entry on the Picnic Allotment. Livestock will be rotated through the 3 pastures scheduled in the rotation and will be trailed off the allotment to the grazing units located on private land and state leases north of the Forest Boundary. Trailing off the Picnic Allotment will be through the Nutrioso Pasture, along an old road that parallels Nutrioso Creek, to the Forest Boundary that adjoins the permittee's private land.

The dormant season allowable forage use is 40% on the herbaceous plants and 25% on the shrubs. Forage utilization will be based on the monitoring of keys areas as outlined in the Monitoring Plan.

The permittee will take action to ensure proper livestock distribution occurs and that forage use levels are not exceeded. If forage use continues above the desired use level, adjustments in the Term Grazing Permit, allotment management plan, or other management actions will be necessary.

## MITIGATION MEASURES

1. The Nutrioso Pasture and an area fenced in 1996 near Correjo Crossing, both of which contain Nutrioso Creek, will no longer be grazed to meet Little Colorado spinedace habitat management objectives.

2. Livestock will graze the allotment every other year. The grazing will result in complete growing season rest every year and 22 months rest between the scheduled livestock entry period of 45 days.

3. Livestock will be trailed through Nutrioso Creek drainage (Nutrioso Trail) on day, every other year, within the excluded Nutrioso Pasture. Potential impacts to Little Colorado spinedace and their designated critical habitat will be mitigated through several actions: 1) Trailing will occur only once every two years; and will occur only when the ground is frozen to prevent impacts to streambanks; and 2) Prior to trailing of livestock, a biologist will inspect Nutrioso Creek for the presence of water and Little Colorado spinedace in those locations where livestock cross Nutrioso Creek. If Little Colorado spinedace are found to be present in these locations, livestock will not be allowed to trail down Nutrioso Creek. Additionally, a biologist will designate the locations where livestock will cross Nutrioso Creek near the Forest boundary to access private land.

4. Mitigation measures designed to improve watershed and riparian conditions on the allotment are listed in Table 1.

5. Developing waters outside of Nutrioso Creek (instead of gap fencing) will result in improved livestock distribution and will reduce impacts to the stream and Little Colorado spinedace.

## RANGE DEVELOPMENT CONSTRUCTION/RECONSTRUCTION

To fully implement this Allotment Management Plan, structural developments will be constructed to improve the distribution of livestock, reduce forage use in key areas and improve existing resource conditions (Table 1).

Existing range developments throughout the allotment will be reconstructed as necessary. All fence construction and reconstruction will utilize smooth wire on the top and bottom strands.

**Table 1. Picnic Allotment planned range developments – construction/reconstruction** (page 69 of EA).

| DEVELOPMENT | UNITS | LOCATION | CONSTRUCTION RESPONSIBILITY | WHEN | MAINTENANCE RESPONSIBILITY |
|---|---|---|---|---|---|
| Pipeline & Water troughs | 1 mile 2 | Extend the Picnic pipeline, north Hwy 180, troughs w/float boxes | USFS equipment & labor | As funding permits | Permittee |
| Mechanical treatment | 457 acres | Treat woodland (150/ac.) | USFS equipment & labor | As funding permits | USFS |
| Stock Tanks | 2 | Place bentonite in Picnic tank & construct a new tank in Sec.8, T.8N., R.30E. | USFS materials/ Permittee labor | As funding permits | Permittee |
| Cattleguard | 1 | State Highway 180 right-of-away, crest of Picnic Hill north of FR57 | USFS equipment & labor | As funding permits | USFS |
| Restoration | 50 acres | Reseed winter browse species | USFS material & labor | As funding permits | Permittee |
| Gate | 1 | Install at Highway 180 underpass between Picnic Hill & Correjo Pastures. Sec.7, T.8N., R.30E. | USFS material & permittee labor | As funding permits | USFS |
| Erosion Control structures (new) | 6 | Correjo gully, Sec. 8, T.8N., R.30E. | USFS & Cooperative | As funding permits | USFS |
| Check dams | 4 | In drainage below Picnic tank, Sec. 8, T.8N., R30E. | USFS & Cooperative $8,000 | As funding permits | USFS |
| Pipeline | 0.1 mile | Picnic pipeline, Sec. 18, T.8N., R.30E. | USFS material/ Permittee labor | As funding permits | Permittee |
| Water gap | 0.5 mile | Remove unnecessary water gap Sec. 9, T.8N., R.30E. | Permittee labor | As funding permits | Permittee |
| Pipeline | 1.5 miles | #6269 in Sec. 18 & 19, T.8N., R.30E. | USFS equipment & labor | As funding permits | Permittee |
| Broadcast burning | | To be done on a 10–15-year interval | USFS equipment & labor | As funding permits | USFS |

## MONITORING PLAN SUMMARY

Implementation Monitoring- Ensure that the actions described in the Decision document are implemented as designed and scheduled, and are in compliance with the Forest plan standards and guidelines

- Planning-Decision Implementation Schedule
- Management- AMP, AOI, Actual Use

Effectiveness Monitoring- To determine if the Forest plan standards and guidelines, grazing prescriptions, and Allotment Management Plan are effective in accomplishing the planned objectives.

- Grazing Utilization-Upland Herbaceous 40%, Shrubs 25%
- TES Monitoring

Validation Monitoring- To determine if management actions are resolving the issues identified in the Environmental Analysis (EA)

- Composition and density-herbaceous and shrub upland vegetation
- Ground Cover/Watershed Stabilization

## BEST MANAGEMENT PRACTICES (BMP's)

A handbook was prepared to assist the owner/operator of a Rangeland Livestock Grazing Activity with the selection of best management practices (BMPs) for voluntary compliance with A.R.S. 49-202.01. This draft publication was developed by the NPS Technical Advisory Committee Group on Livestock Grazing Activities. The following are excerpts from this handbook that relate directly to the allotment management plans developed on the Forest.

1. The goal of maintaining or improving the quality of water should be included in management plans for livestock grazing activities. While the goal of the Clean Water Act is to improve water quality, some waters have acceptable quality which should be maintained.

2. The location, timing and intensity of livestock grazing activities should be controlled with objectives of achieving soil cover to prevent accelerated erosion and to protect water quality.

3. Structural range improvements, such as fences, water developments, trails and corrals, should be planned, constructed and utilized in a manner to enhance or maintain water quality.

4. Land treatments to manage vegetation or practices to reduce erosion should be planned, implemented and maintained to minimize adverse impacts on water quality.

5. Livestock Management Activities, such as parasite control, feeding and salting, should be done in a manner to protect water quality.

Specific activities to maintain or improve water quality for the Milligan Valley Grazing Allotments follow.

1. **Brush or woodland management treatments,** if implemented to improve soil quality, shall be accomplished in a manner that will retain at least 5 tons/acre of treatment generated large woody debris (3 inch and larger) dispersed evenly across the site. Ground cover within 2 years of treatment shall be at or above the tolerance ground cover needed to protect soil productivity and hydrologic function. **TES map unit 503, 516, 591, 592 and 523** require 5 to 7 tons per acre of residual material to maintain hydrologic function of the soil. Grazing management or maintenance measure will be applied to enhance the success of the treatment. This may involve 2 growing seasons of rest to let herbaceous cover become established. Use of temporary fencing or modified rotation of livestock may be required. Utilize BMP implementation form for mechanical treatment to evaluate land treatments with regards to potential water quality impact.

2. **Prescribed fire treatments** should be applied only under conditions that the intensity and rate of spread of the fire are controlled. To protect soil productivity, fire intensity should be low to moderate to prevent loss of soil nutrients, organic matter and the alteration of soil physical properties, such as structure and pores, that would reduce infiltration of water into the soil. Utilize BMP implementation and effectiveness form for prescribed fire to evaluate the treatment with regards to potential water quality impacts.

3. **Seeding projects** should be implemented in areas where native seed is scarce, or in areas where eroding upland and riparian areas are contributing directly to sedimentation in stream channels, especially in areas used as filter strips to mitigate other management practices. Provide a period of protection from grazing to promote establishment of herbaceous plants.

4. **Planned grazing systems** shall be implemented to maintain or improve plant cover for the purpose of maintaining existing plant cover while properly using the forage available, increasing efficiency by uniformly using all suitable parts of each grazing unit, reducing erosion and improve water quality, insuring a supply of forage throughout the grazing season, increasing production with improved quality of forage, enhancing wildlife habitat, promoting flexibility in the grazing program and buffer the adverse effects of drought. Proper stocking and improved distribution of cattle will be major considerations for evaluating effects of implementing a system.

5. **Grazing** shall be at an **intensity** that will maintain enough cover to protect the soil or improve the quantity and quality of desirable vegetation. Allowable use will be adjusted by range condition class on fully and potentially capable land. Key grazing areas will be monitored to determine when cattle should be moved to prevent overuse.

6. **Utilize salt** to improve livestock distribution. Salt a reasonable distance away from water or natural congregating areas such as roads, trails, and saddles in hills, and avoid key areas. Move salt when distribution objectives are not being met or to correct localized overuse problems.

7. **Access roads** for the maintenance of grazing improvements shall be engineered to facilitate reasonable control and disposal of water, to control erosion, and make the best possible use of topographical features,

where possible. Access roads shall not be placed along or parallel to the stream channel within the streamside management zone. Crossing shall be perpendicular to the stream and the number of crossings should be minimized. Road gradients should not exceed 10 percent except for short lengths where more acceptable design criteria are prevented. All cuts and fills will be stabilized. Drainage structures will be engineered to provide adequate surface drainage to meet site specific criteria and runoff conditions. Culvert, brides or grade dips for water management shall be provided at all natural drainage ways. Roadside ditches shall be engineered to provide surface drainage for the roadway and deep enough to serve as outlets for subsurface drainage. Drainage channels shall be sited on stable grades or protected with structures or linings for stability. Rolling dips or water bars shall be incorporated into design criteria to control surface runoff. These should be maintained periodically to ensure proper function. Structures shall be placed on all water bar or rolling dip outlets to trap sediment and slow erosive force of water. Lead-out ditches shall not be placed directly into water courses. Water quality shall be protected during and after construction by erosion-control facilities and maintenance. Filter strips, sediment and water control basins, as well as other accepted conservation practices hall be used and maintained as needed.

**Grazing management strategy for Implementing the Clean Water Act**

In 1972, the Federal Water Pollution Control Act (FWPCA) Amendments became law. The Clean Water Act (CWA) amended the original document with further modifications occurring in the Reauthorization Act of 1987. Together, these documents provide the authority to manage water quality on National Forest Service (NFS) lands with the objective to restore and maintain the chemical, physical and biological integrity of the nation's waters. Section 319 of the amended CWA provides the authority for each state to prepare a nonpoint source (NPS) water quality management program that includes cooperation with Federal agencies. As part of that cooperation that states have recognized the Forest Service as a designated management agency for NPS water quality management. They have recognized our Integrated Resource Management (IRM) process for developing Best Management Practices (BMPs) to control NPS water pollution on NFS lands.

In addition, the Arizona Department of Environmental Quality, Nonpoint Source Unit, will provide water quality certification for fully finalized projects when the following information has been submitted for their review:

1. A detailed map(s) showing exact location of the project(s).

2. A precise description of the activity(s) that will be occurring on the project(s).

3. A water quality management plan containing the implementation strategy used to comply with Surface Water Quality Standards. The water quality management plan shall include:
   - An identification of rivers, streams or water bodies which will, with reasonable probability, be impacted by the activity(s).
   - The management practices (BMPs/Guidance practices) to be implemented by the owner/operator to maintain compliance with Surface Water Quality Standards.
   - A monitoring plan to document implementation of the Water Quality Management Plan and Surface Water Quality Standards.

- Connectivity to stream segments identified in the Arizona Water Quality Assessment, 1996 shall be established. Allotments with grazing activities that affect stream segments that are considered non-attaining of water quality standards for designated uses by the State shall be considered a high priority for completion.

A BMP is a practice or combination of practices that are determined (by a State or designated area-wide planning agency) through problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

## Monitoring of BMPs

Monitoring the condition of land, water, vegetation or compliance with management plans for a project will meet the intent of the water quality certification rules. The following are examples of monitoring currently used and its type (I=Implementation, E=Effectiveness):

Production/utilization studies (I, E)
Permittee compliance, adhering to AOP (I)
Road maintenance inspections (I, E)
Parker 3-Step monitoring (E)
Proper Function Condition evaluations at specified intervals (E)
Paced Transects (E
Ocular ground cover estimates (E)
Soil condition evaluations (E)
Daubenmire transects (E)
BMP implementation and effectiveness monitoring worksheets from R-3 (I, E)

# Molina Springs

## Allotment Management Plan

T8N, R30E, Primarily Sections 4, 9, 16, 21 Gila Salt River Base and Meridian (GSRBM).

This allotment management plan has gone through the National Environmental Policy Act (NEPA) process, including Environmental Assessment (EA), Finding of No Significant Issues (FONSI), and Decision Notice (DN) finalized July 17, 2012 and implemented on November 13, 2012 following appeal disposition.

### Description of Allotment:

The allotment is 3,338 acres in size and located approximately 6 miles east of Springerville, Arizona. Of the 3,338 acres, 2,643 acres are considered full capacity[1], 600 acres have potential capacity and 95 acres have no grazable acres/capacity. The elevation ranges from 7,300 feet to 7,700 feet and the topography is relatively flat. The allotment is approximately 55 percent forested (pinyon-juniper) and 45percent grassland.

The allotment has the North and South pastures. The North pasture contains a relatively new well and troughs and the South pasture contains Molina Springs and its associated distribution lines. The allotment entry date has typically been around October 20 with exit dates around December 15. The short duration of use (2 months every other year) has been successful as the permittee is able to alternate use with the adjacent Picnic allotment.

Since 1997, grazing every other year has provided one complete year of pasture rest. This has maximized opportunities for increased vegetation vigor, desirable species diversity and has promoted an increase in vegetative ground cover for soil protection. In addition, a management guideline of 30 to 40 percent conservative use in the uplands as measured at the end of the grazing season has been used to maintain and improve vegetative and soil conditions (USDA FS Southwestern Region 1997). Average livestock utilization since 2000 has ranged between 10 and 20 percent.

Current management (described above) has been in place since 1997. Prior to this time (1977 to 1997) the allotment was stocked with varying numbers, from 130 to 733 AUMs the majority of time, for 6 months. In 1998, the permittee voluntarily agreed to change the grazing season from year-round to dormant season (winter) grazing to improve vegetation composition and diversity.

### Goals:

- To provide for forage availability to support domestic livestock and contribute to the economic diversity and social well-being of surrounding communities that depend on range resources for their livelihood.
- To provide a more reliable water source that would improve livestock distribution and reduce livestock concentration in the south pasture.

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[1] **Full Capacity (FC)**: Lands that are presently stable because effective ground cover is holding soil loss to an acceptable level, and are suited for grazing and can support livestock production. **Potential Capacity (PC):** Those lands not undergoing accelerated erosion but requiring access, water developments, or other improvements to bring them up to full capacity. These areas often produce 50 lbs. or less of air-dried forage due to dense tree canopies. **No Capacity (NC):** Lands that are incapable of being grazed by domestic livestock under reasonable management goals. These include areas under natural conditions that are not capable of producing vegetation, soils that are not capable of producing more vegetation than is needed to prevent excessive erosion rates, and slopes over 45 percent.

- Allotment wide vegetation and soil conditions are meeting desired conditions, however there is a need to improve vegetation composition in localized areas where livestock concentration occurs.

- To incorporate additional flexibility (such as varying the stocking rates, season of use, and grazing system) into the management of the allotment in order to allow the Forest Service and grazing permittee the ability to adapt management to changing resource conditions or management objectives.

## Desired Future Conditions

### Range

- All structural and non-structural improvements are in functional conditions.
- Where potential exists, achieve or maintain rangeland to its potential state.
- Where potential exists, increase diversity of forage species to have distribution of native species for increase desirable species and ground cover.
- Where potential exists, increase diversity of forage species to have distribution of native species of warm and cool species and ground cover.
- Where potential exists, restore rangeland by fuel treatment (not covered by 2012 NEPA).

### Wildlife

- A significant portion of the once open grassland habitat important for antelope has been invaded by juniper and pinyon trees, reducing the habitat value for antelope. A long term goal for the allotment is to restore the open grassland habitat by mechanically treating the juniper and pinyon trees that have invaded the grassland habitat and reintroduce periodic prescribed fire to maintain the open grassland conditions needed by antelope. Grassland restoration is also intended to increase cool season herbaceous species that are important to a variety of wildlife species (not covered by 2012 NEPA).
- The northern portion of the allotment is managed to maintain and improve winter range habitat conditions.

### Fisheries/Watershed/Soils

- Maintain satisfactory **downstream** riparian and instream habitat conditions in order to benefit aquatic dependant resources (**riparian is not present on allotment**).
    - Satisfactory or better watershed conditions are maintained in both the drainage corridors and in the uplands to minimize sediment movement into drainages.
    - Existing road system has minimal effect on erosion rates that could potentially alter stream habitats.
    - Little to no active headcutting occurring within drainages in the action area.
    - Restoration of downcut channels, where feasible.

- Aquatic habitats in the action area support viable populations of species designated as TES and MIS as well as other vertebrate species that are suitable to those habitats.
- Move toward minimizing soil erosion to below threshold levels, minimize soil compaction.
- Identify watershed improvement opportunities (on gullies, headcuts, excessive erosion)
- Record presence of Noxious Weeds.

### Heritage

- Heritage resources are inventoried, documented, and evaluation of all sites are to Forest standards. Furthermore, management activities should promote the protection and preservation of heritage resources.

### Management:

- Authorize livestock grazing during a portion of the dormant season (mid-October to mid-December) every other year for approximately 60 days. The length of grazing within each pasture will be determined on an annual basis.

- Permit livestock numbers between 0 and 407 AUMs. Grazing would remain below 303 AUMs until water development improvements in the north pasture are complete. Allow up to 407 AUMs only after desired conditions are met.

- Authorize annual livestock numbers based on existing condition, available water and forage, and the predicted forage production for the year. Allow for adjustments (increase or decrease) to the annual authorized livestock numbers (not to exceed 407 AUMs) during the grazing year, based on current conditions.

- Use a deferred rotation system during the dormant season in the years the pastures are grazed. Pastures would generally be grazed once per grazing year. However, if the need arises to provide rest or deferment, a pasture maybe grazed provided grazing is managed to meet the desired condition.

- Apply a conservative use management guideline of 30% to 40% for upland areas as measured at the end of the grazing season to maintain and improve vegetation and soil condition.

- Construct 3 new water storage tanks and 3 troughs and a 1.3-mile distribution line from the existing well to troughs in the north pasture of Molina Springs allotment. Wildlife access and escape ramps will be installed (see map page 11).

- Utilize techniques such as salting and herding to achieve proper distribution or lessen the impact on concentrated areas around water points in the north and south pasture.

### Adaptive Management

Adaptive management options provide a range of actions that may be needed to adjust management to meet desired conditions. If monitoring indicates that desired conditions are not achieved, management will be modified with one or more adaptive actions. Adaptive management allows the Forest Service to adjust: the timing, intensity, frequency and duration of grazing; the grazing management system and livestock numbers. If adjustments are needed, they will be implemented through the annual operating instructions (AOI). Adaptive management options for all allotments include:

- Reconstruction of the Molina spring in the south pasture, reconstruction of distribution lines and tanks, and installation of a storage tank with wildlife access and escape ramps. If this action is needed, an additional NEPA analysis will be completed.

### Additional Management Requirements

- Appropriate inventories must be conducted in advance of the implementation of any ground-disturbing activities. Projects should be managed in such a manner that ensures a determination of

either "No Historic Properties Affected" or "No Adverse Effect" to heritage resources, and discovery of any undocumented heritage resources during project implementation should result in immediate cessation of any ground disturbing activities in the locale and notification of the Forest Archaeologist.

- According to the Programmatic Agreement between the Forest Service and the State Historic Preservation Officer, maintenance, replacement, or reconstruction of existing facilities are not considered undertakings and do not require additional survey. However, activities may be considered undertakings, depending upon the nature of the installation/removal activities.
- Natural springs and the summits of knolls and mountains are often traditional cultural places (TCP's), and the allotment contains potential shrine sites. Therefore, any proposed projects that are in the vicinity of springs, or on the summits of prominent knolls or mountains have the potential to affect TCP's (even if these projects are not considered undertakings by the AZ State SHPO) and will therefore require Tribal Consultation.

## Monitoring Strategy

### Introduction

The objective of this monitoring strategy for the Greens Peak, Hall and Cerro Trigo allotments is to identify monitoring methodologies and frequencies, to determine whether management is being implemented as envisioned in the chosen alternative, and whether the actions are effective at achieving or moving toward desired conditions.

Monitoring is a measure of indicators that detect change and may trigger further detailed analysis of a particular resource. Either monitoring or detailed analysis may trigger adaptive management options on the allotments on a seasonal basis or to verify changes needed in the Allotment Management Plan and term permit.

We need to acknowledge that there are environmental factors outside management control, such as multi-year droughts or large fires, which can overpower the effects of livestock management actions. The time frames of this strategy do not take such events into account. However, such events can take place and if so, need to be taken into account in analyzing the effects of management on the resources. Another major environmental factor affecting resource condition is the West-wide increase in tree canopy cover of almost every tree species. In these allotments it is most felt in historic grasslands being overtaken by juniper and ponderosa pines, and taking on the aspect of forests. This ongoing increase in tree cover outcompetes and replaces herbaceous and shrubby cover, and cannot be reversed by livestock management. Where TES map units envision potential vegetation communities being grasslands, and existing tree cover exceeds about 10 percent, only active tree reduction projects will open enough resources to effect movement towards increased similarity to the envisioned herbaceous density and composition. Such projects are not within the scope of this analysis and decision.

This strategy envisions that final details of monitoring locations, if not already established, will be established in a collaborative way with input from the district range personnel, the riparian coordinator and permittee(s). For instance, certain stream reaches have been identified by name in the analysis as being in less than Proper Functioning Condition. Selecting where along the identified reach to install permanent monitoring transects would be done as described above.

Tables are provided that give an overview of monitoring needs on the allotments, followed by narratives that explain planned monitoring in more detail.

## Monitoring Definitions

Monitoring: Monitoring is defined as the orderly collection, analysis, and interpretation of resource data, to evaluate progress toward meeting management goals and objectives. This process must be conducted over time in order to determine whether or not management objectives are being met.

Implementation Monitoring: Determines whether standards and management practices are implemented as detailed in a Decision Document, Allotment Management Plan (AMP), or Annual Operating Instructions (AOI). This short-term monitoring answers the question: was the management implemented as designed? It annually documents several items. Items which may be documented through implementation monitoring include, but are not limited to: actual use (livestock numbers and days), condition of range improvements, levels of forage utilization, stubble heights, etc.

Effectiveness Monitoring: Determines whether management practices are effective in moving the allotment toward a desired condition as described in the AMP. This long-term monitoring documents whether management actions are having the expected progress towards achieving resource management objectives. Examples include:

1) Evaluating changes in vegetation composition or soil cover (ecological status).
2) Tracking progress of specific PFC elements

## Monitoring Summary

The following Tables 1 and 2 summarize the monitoring to be accomplished on the allotment.

Table1: Summary of Monitoring

| Monitoring Item | When |
|---|---|
| Ecological Status/Range Condition (trend, composition, cover) | As Needed |
| Riparian Condition / Key PFC Elements | N/A |
| Soil Condition | As Needed |
| Watershed / Soils Problem Areas | As Needed |

Table 2: Specific Monitoring Items: Who, What, When and Where

| Monitoring Item: | Methods | Timing | Frequency (Interval, years) | Where | Critical Triggers | Lead |
|---|---|---|---|---|---|---|
| Ecological status/range condition (Trend, composition, ground cover) | Various methods* | Late summer | Year 5 and10 | Permanent transects | Poor or very poor range; Less than USLE tolerance thresholds conditions | Range |
| Soil condition | Various methods* | Any | As needed year 5 and 10 | Critical areas | Downward or non-apparent trends | Watershed |
| Watershed/soils problem areas | Field observation and/or inspection | Any | As needed year 5 and 10 | Gullies, headcuts, rills | Non-apparent or downward trends | Range |

*Available from Interagency Technical,1996, Southwestern Region Rangeland Analysis and Management Training Guide, Principles of Obtaining and Interpreting Utilization Data on Rangeland, 5/07, and other acceptable methods.

## Monitoring Strategy: Range Management

**Implementation Monitoring --** Objective: Insure that the action(s) described in the Decision Document (EA) are implemented accordingly, as scheduled and are in compliance with the Forest Plan standards and guidelines.

Annual monitoring to adjust or evaluate the timing, intensity, frequency and season of use, and livestock numbers will be conducted during the grazing season (seasonal) and/or at the end of the growing season. These practices are part of adaptive management and make necessary management changes needed for range development and recovery.

Compliance with Annual Operating Instructions (AOI) – Each year's AOI includes specific pasture rotations, livestock numbers to be grazed, pasture entry and exit dates, improvement maintenance and construction, and general annual allotment operating procedures. Monitoring involves allotment inspections, counting livestock on or off, and required permittee-provided documentation of accurate records of the number of livestock run on the allotment and entry and exit dates of each pasture grazed.

Forage Utilization (Height-Weight, Landscape Appearance, Grazed Class etc.) - To assure that conservative maximum use levels of 30%-40% in key upland areas and levels of 20 to 40% used within northern goshawk habitat are being met. Along with actual use and stubble heights, these methods measure short-term effects of grazing activities and are used as a basis for adjusting future grazing use.

**Effectiveness Monitoring --** Objective: Effectiveness monitoring is intended to determine whether management is successful at moving rangeland resources towards desired conditions. The long term-term health of upland and riparian resources will be monitored in key areas or critical areas on each allotments using one or more of the following methods as needed, but not limited to:

Ecological Status and/or Range Condition/Trend - Range transect sites and areas suitable for determining long-term trend in vegetation should be read at years 5 and 10. Emphasize monitoring ecological status.

1. Ecological Status (Cover Frequency/Similarity)
2. Paced Transect
3. Parker 3-Step

Soil Cover – The percent of an area that is covered by vegetation, rocks and litter. Ground cover is important to intercept raindrops impact before reaching the soil. An increase in vegetation and litter cover from baseline measures documented in the project files is considered as moving toward Desired Conditions (DC); a decrease is considered as not accomplishing DC. Soil cover data can be accomplished using any of the protocols below, or through stand-alone data collection.

1. Point Cover
2. Cover Frequency
3. Paced Transect
4. Parker 3-Step

Forage Production – Forage production surveys are optional unless indicated by actual forage utilization levels significantly higher or lower from those listed in the decision for the various land categories, for more than a single year. Forage production surveys will facilitate capacity determination if the rangeland is found able to support more AUMs than the current high end or less than the current low end.

1. Ocular Estimates with Calibration Clipping
2. Production/Utilization surveys and mapping

Noxious Weeds - The location of any noxious weeds should be noted in the monitoring write ups, and transferred into the current Forest Service database. If appropriate, at discovery noxious weeds shall be grubbed out or treated and documented regarding the location.

Monitoring will be used to analyze and if necessary adjust or amend previously described actions in the decision document or AMP. Permittees should be informed of upcoming monitoring dates and invited to attend or assist. Information on monitoring should be shared with the permittee and others concerned with the decision. Data provided by the permittee or other stakeholders can be accepted and used if performed in locations and with protocols meeting Forest Service standards.

If the monitoring data indicates management is not achieving or moving toward the Desired Conditions, Forest Service personnel must analyze the problem and decide on a course of action. If necessary, an ID Team may be instituted to determine if the goals and objectives are correct or need to be adjusted. Re-initiation of NEPA is not necessary if the adaptive action is still within the scope of the original decision.

## Monitoring Strategy: Watershed/Hydrology, & Soils

Watershed Hydrology Monitoring Methods

Under "watershed monitoring," most often parameters of runoff timing, runoff quantity, runoff quality, and sediment yield apply. Current levels of livestock grazing usually do not produce measurable change resulting from allotment management on any of these parameters. Runoff timing and quantity is usually a function of either massive precipitation events such as large rainfalls or rain on snow events, or large-scale ground disturbing activities such as wholesale clear-cut logging or fires that remove existing overstory and ground cover. The smaller scale of sediment discharge associated with grazing allotments is best monitored at a local scale, watching for pedestalled plants, surface rill erosion or gully formation within problem areas. Larger basin-scale monitoring of sediment movement is usually studied in relation to river or stream functionality (PFC discussed below) or on even larger scales which aim at geomorphological changes.

As watershed hydrology is intimately related to the health or functionality of its drainage network, monitoring drainage characteristics often pays off. **Only a small section of canyon confined, ephemeral riparian is found on the very north end of the Molina Springs allotment.**

There are numerous elements that influence watershed function: soil infiltration rates, ground cover, canopy cover, amount of overstory, soil type, soil condition including compaction, soil structure, slope, etc. Many of these factors have been combined into what are known as "runoff curves" in standard methods of calculating potential runoff from different ground cover scenarios such as urban areas, pavement, and agricultural fields, to name a few. These methods can estimate runoff from whole sub-watersheds or basins and are sensitive to gross differences in cover type, like for example an urban area versus an agricultural field. However, they are not designed to be sensitive to minute changes that occur from subtle differences in compaction for example, or slight changes in litter ground cover. Most runoff formulas use soil type as a constant (soil classes A thru D) and subtle differences in soils are not accounted for. Therefore the concept of runoff curve numbers is incapable of tracking allotment management changes and is wholly inadequate as a monitoring tool at smaller scale.

In terms of monitoring "watershed condition," attention focuses on ground cover. This item is covered under "Soils" below. Related characteristics, such as monitoring local rill and gully formation or areas of excessive plant pedestalling are also discussed under "Soils." The condition of drainage channels is discussed under "Riparian Areas" below.

Soil Monitoring Methods

As soil formation is extremely slow, the conservation of soils – the basic resource – is of prime importance. Several attempts at modeling soil erosion have been made, however in order to simplify the countless contributing factors, most of these models were initially designed to simulate erosion from agricultural fields. Later, these models were extrapolated to wildland situations; however their results must be taken at best as gross estimates of actual values. Resulting values serve more as a basis of comparison rather than absolutes.

The most used of these erosion models is known as USLE, or the Universal Soil Loss Equation. The USLE is the most comprehensive technique available for field use in estimating cropland erosion. It involves six major factors that affect upland soil erosion in terms of water: rainfall erosiveness, soil erodibility, slope length, slope steepness, cropping management techniques, and supporting conservation practices. Four values are commonly derived from USLE, including erosion rates and corresponding ground cover for: potential soil loss, natural soil loss, current soil loss and tolerance soil loss. These are further defined in the Apache-Sitgreaves Terrestrial Ecosystem Survey. Briefly, they are defined as follows. Natural soil loss is the rate of soil loss expected under climax conditions, potential soil loss is the loss rate expected under complete removal of ground cover, tolerance soil loss is the loss rate that can

occur while sustaining inherent productivity, and current soil loss is the loss rate under existing conditions of effective ground cover.

The most important element in controlling erosion, according to the USLE model, is **ground cover**. A minimum of ½ inch of litter, a live plant base or a rock of at least ½ inch diameter counts as effective ground cover. Data regarding effective ground cover is collected in numerous ways. It is collected from permanent range transects (Parker 3-Step), from Daubenmire transects, from pace transects, or even from ocular estimates. This ground cover data is sufficient to track changes in ground cover, which relates to watershed condition as well as soils.

If more detailed information is desired regarding soils, then the standard Region 3 protocol for **soil condition** is used which more closely looks at numerous site factors that enter into soil function. This may be of use in areas as small as a pasture, in order to assess what elements of soil condition may be at risk the most and it may also yield some answers regarding what needs to change for a better soil condition score.

In specific local instances, **problem areas** with obvious signs of erosion such as rills, gullies, headcuts, or pedestalled plants may be found. If documentation of this is desired, it is recommended to take photographs, roughly describe conditions and mark locations on maps so they can easily be relocated. It is advised to seek help from SO watershed specialists regarding restoration plans. If needed, conduct a soil condition assessment in order to help determine causes of accelerated erosion that can then be used to change livestock management or to seek other means of helping to correct the situation. In cases of large headcuts or gullies, different livestock management may help the healing process, but active restoration will be needed to reshape affected areas and to provide effective means of stabilization.

### Monitoring Strategy: Wildlife & Fisheries

Monitoring described for range, watershed and soils will meet the needs of wildlife and fisheries.

Monitoring of important wildlife habitat parameters (e.g. wildlife forage, antelope fawn hiding cover) have been incorporated into the range monitoring planned for this allotment.

Fisheries desired conditions focus on maintenance of healthy watersheds, including riparian areas, in order to minimize downstream adverse effects to aquatic species from allotment generated sedimentation effects. Monitoring identified for soils and watershed is also crucial for aquatic resources.

### Documentation of Monitoring

All forms of monitoring will be documented and retained in appropriate District files.

### Best Management Practices

A Best Management Practice (BMP) is a practice or combination of practices that are determined (by a state or designated area-wide planning agency) through problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals.

BMPs from various sources have been incorporated into the authorization, monitoring, adaptive management options and mitigation measures for the proposal. These sources include Arizona Department of Environmental Quality, Apache-Sitgreaves Land Management Plan, Forest Service Handbook 2509.22 (R3 Soil and Watershed Conservation Practices Handbook), and other sources listed in the Specialist Report for Watershed, Hydrology, Riparian and Soils.

The following are examples of BMPs incorporated into project design:

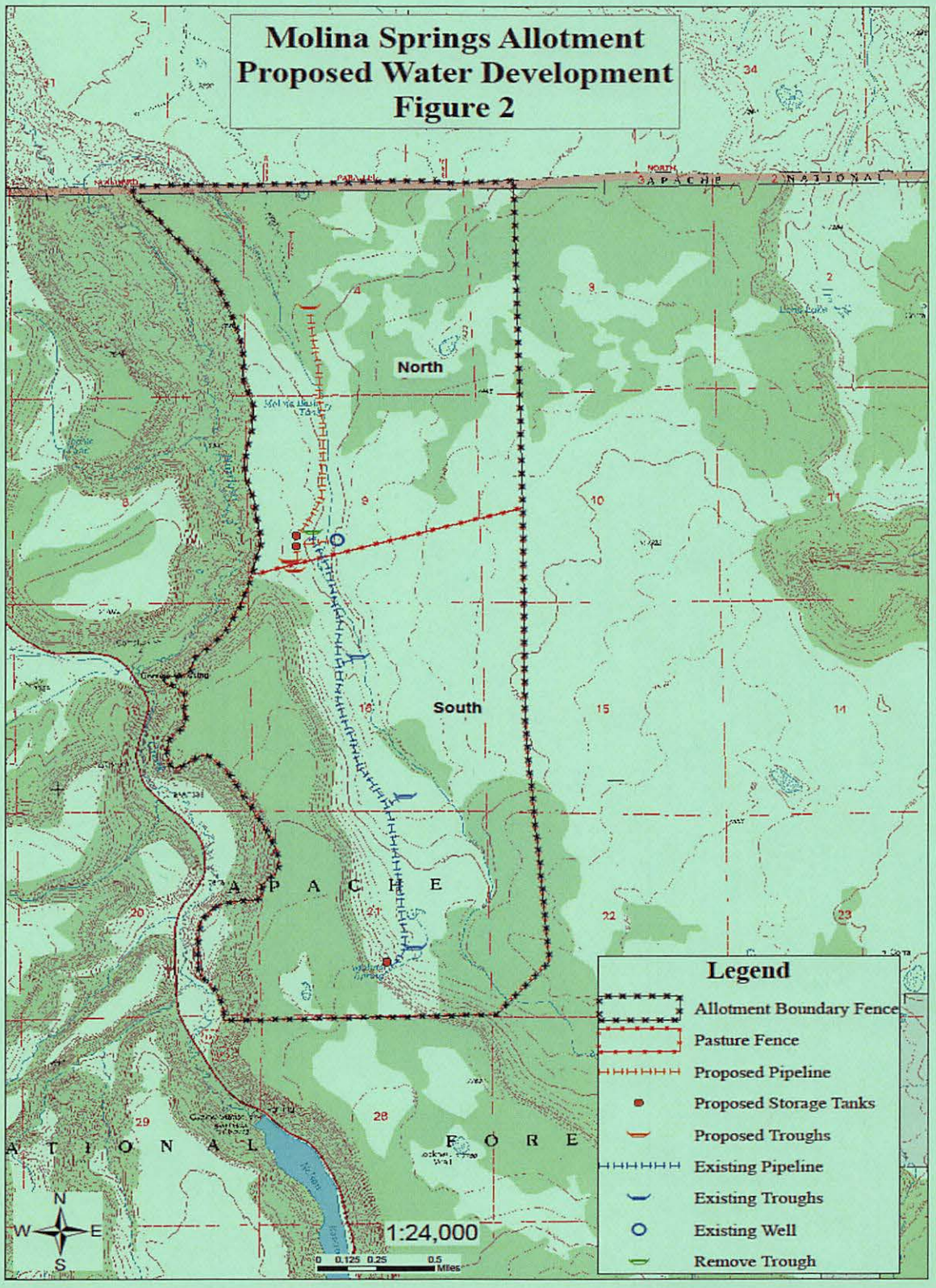
**1.** The **location, timing and intensity of livestock grazing** activities shall be implemented with objectives of achieving soil cover to prevent accelerated erosion and to protect water quality.

**2. Planned grazing systems** shall be implemented to maintain or improve plant cover while properly using the forage available, increasing efficiency by uniformly using all suitable parts of each grazing unit, reducing erosion and improve water quality, insuring a supply of forage throughout the grazing season, increasing production with improved quality of forage, enhancing wildlife habitat, promoting flexibility in the grazing program and buffer the adverse effects of drought. Proper stocking and improved distribution of cattle will be major considerations for evaluating effects of implementing a system.

**3. Grazing** shall be at an **intensity** that will maintain enough cover to protect the soil or improve the quantity and quality of desirable vegetation. Utilization guidelines may be adjusted by soil condition and other resource concerns. Key grazing areas will be monitored to determine when cattle should be moved to prevent over use. Riparian areas shall be identified as critical areas.

**4**. Utilize **salt** to improve livestock distribution. Salt a reasonable distance (at least ¼ mile) away from water or natural congregating areas such as roads, trails, and saddles in hills, and avoid key areas. Move salt when distribution objectives are not being met or to correct localized overuse problems.

**5**. **Structural range improvements**, when determined necessary to meet desired conditions, such as fences, water developments, trails and corrals, will be planned, constructed and utilized in a manner to enhance or maintain water quality.


Molina Springs Allotment
Proposed Water Development
Figure 2
North
South
A P A C H E
A T I O N A L F O R E
Legend
Allotment Boundary Fence
Pasture Fence
Proposed Pipeline
Proposed Storage Tanks
Proposed Troughs
Existing Pipeline
Existing Troughs
Existing Well
Remove Trough
N
W
E
S
1:24,000
0 0.125 0.25 0.5 Miles

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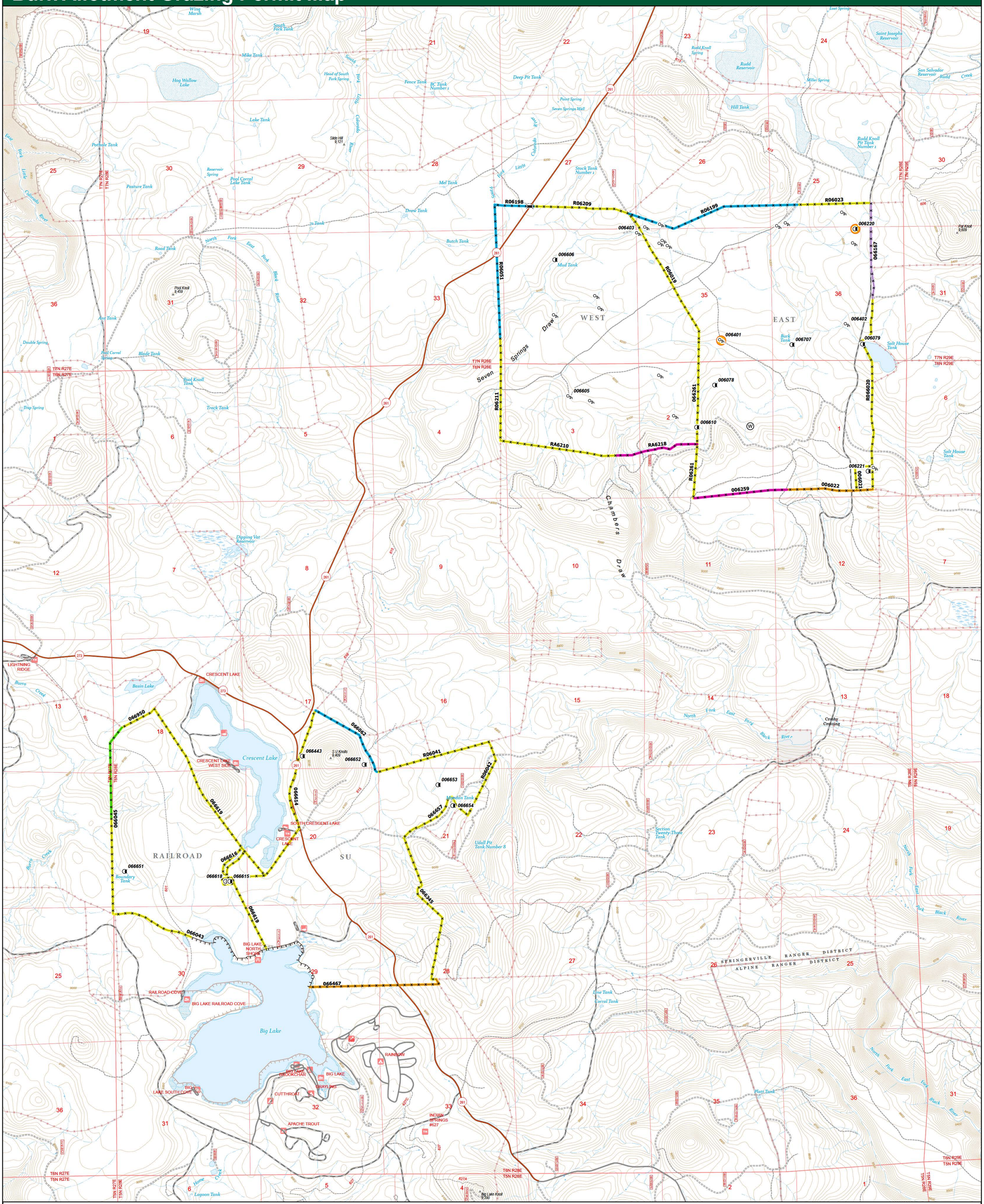
U.S. DEPARTMENT OF AGRICULTURE

# Burk Allotment Grazing Permit Map

Southwestern Region | Apache-Sitgreaves NFs




Apache-Sitgreaves National Forests
Springerville Ranger District
Range Improvement Map

## Burk Allotment

N

0 0.5 1 1.5 2 Miles

NAD 1983 UTM Zone 12N

Ⓦ Well
Spring
Stock Tank
Cattleguard

Maintenance Responsibility
Burk Permittee (Walker)

Maintenance Resposibility
Burk Permittee (Burk)
Burk Permittee (Walker)
26 Bar Permittee
Hayground/Reservation Permittee
Rudd Creek Permittee
Udall Permittee
Natural Barrier
Fence

This map is part of Grazing Permit No. _____ issued to _____ on _____ by _____ and shows the Burk Allotment.

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4/3/2025

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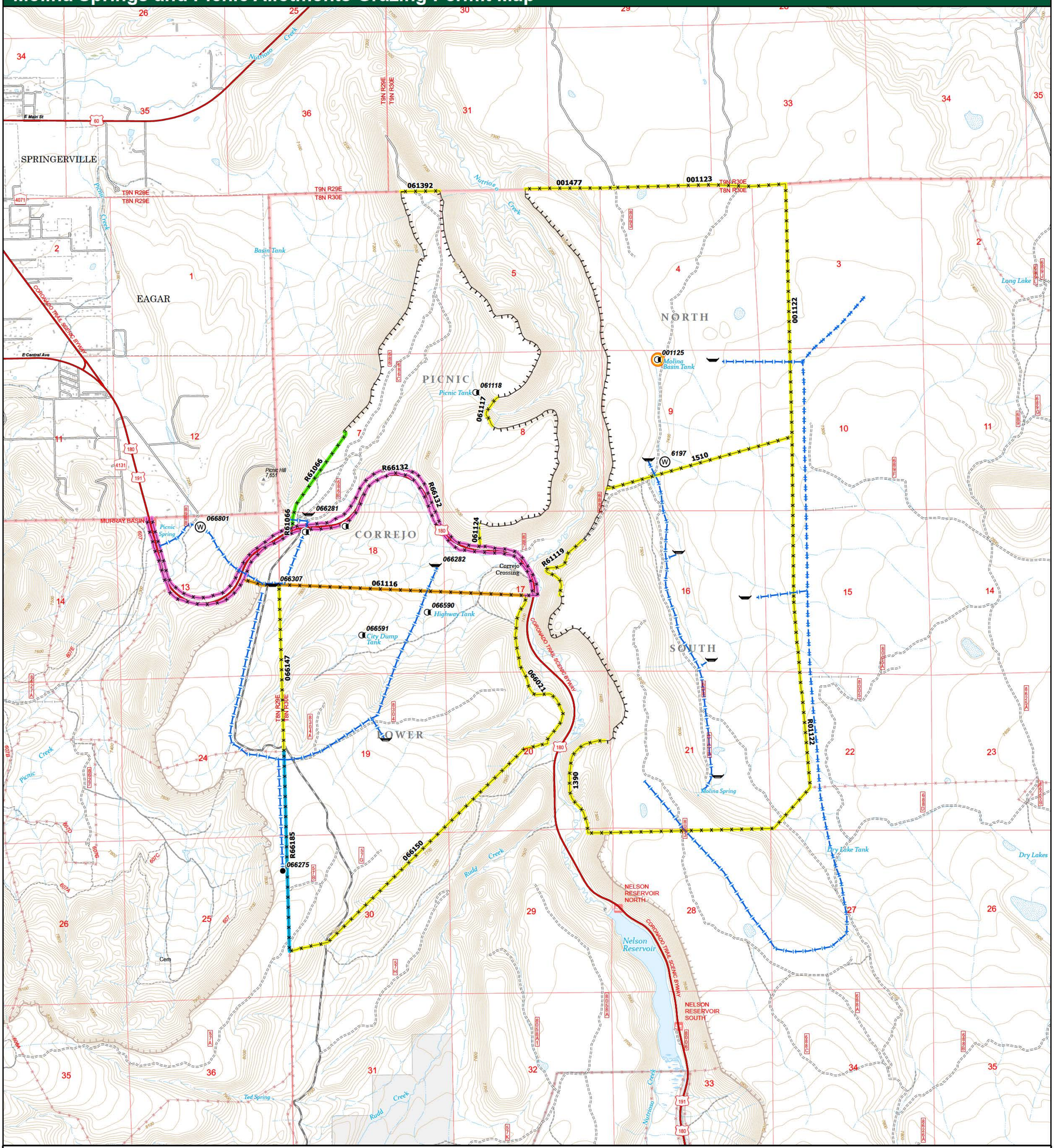
U.S. DEPARTMENT OF AGRICULTURE

# Molina Springs and Picnic Allotments Grazing Permit Map

Southwestern Region | Apache-Sitgreaves NFs




Apache-Sitgreaves National Forests
Springerville Ranger District
Range Improvement Map

## Molina Springs and Picnic Allotments

N

0 0.5 1 1.5 2 Miles

NAD 1983 UTM Zone 12N

- Pit (Stock) Tank
- Water Storage Tank
- Trough
- Well
- Pipeline

Maintenance Responsibility

- Molina Springs/Picnic Permittee (Walker)

Maintenance Responsibility

- Molina Springs/Picnic Permittee (Burk)
- Molina Springs/Picnic Permittee (Walker)
- Basin Permittee
- Murray Basin Permittee
- ADOT
- Natural Barrier
- Fence

This map is part of Grazing Permit No. _____ issued to _____ on _____ by _____ and shows the Molina Springs and Picnic Allotments.

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